	PERMIT APPLICATION REVIEW SUMMARY	**New Hampshire Department of Environmental Services** **Air Resources Division** **P.O. Box 95, 29 Hazen Drive** **Concord, NH 03302-0095** **Phone: 603-271-1370 Fax: 603-271-7053**

Facility:	Wheelabrator Claremont Company LP			**Engineer:**	Padmaja Baru	
Location:	Claremont, NH					
AFS #:	3301900029	**Application #:**	09-0005	**Date:**	9/11/2012	Page 1 of 10

Date Application received

Wheelabrator-Claremont's current Title V Permit TV-OP-050 expired on June 30, 2009. Pursuant to Env-A 609.07(b), Title V renewal application is due six months prior to the expiration date of the current Title V permit (i.e., by December 31, 2008 in this case). DES received Wheelabrator's renewal application on January 2, 2009. The administrative completeness letter issued by DES on March 31, 2009 noted that since the renewal application was not received in a timely manner, continued operation of the permitted devices after June 30, 2009 will not be covered under the application shield provisions of Env-A 609.08, *Application Shield*.
On June 3, 2009, Wheelabrator requested DES to waive the timely renewal application requirement so that it may continue to operate the facility in accordance with the current permit under the application shield provisions of Env-A 609.08. On June 24, 2009, DES approved Wheelabrator's request and granted a waiver of the strict interpretation of Env-A 609.07(b), with the following conditions:

1. Wheelabrator shall continue to operate the facility under the terms and conditions of TV-OP-050 (amended on August 28, 2006 & December 17, 2007);

2. The waiver is in effect from July 1, 2009 until such time as DES takes final action on Wheelabrator's Title V renewal application.

The waiver was issued in accordance with Env-A 205.04.

PROJECT DESCRIPTION

The purpose of this project is to renew facility's Title V operating permit.

CHANGES FROM PREVIOUS PERMIT

1. Since the issuance of previous Title V permit to Wheelabrator-Claremont, DES adopted more stringent emission limits for small municipal waste combustion (MWC) units. The new rule Env-A 3300 *Municipal Waste Combustion* became effective on February 2, 2008. The following table includes a comparison of new and old emission limits (measured at 7% O_2) for small MWC units:

Pollutant	Emission Limits[1] included in the previous Title V Permit	New emission limits[2] (Env-A 3300 eff. 2-2-2008)	Compliance method
Particulate matter	70 mg/dscm	**27 mg/dscm**	Stack test
Opacity	10% (6-minute average)	10% (6-minute average)	Stack test
Carbon monoxide	100 ppmdv	100 ppmdv	Continuous emissions monitoring system
Cadmium	0.10 mg/dscm	**0.040 mg/dscm**	Stack test
Lead	1.6 mg/dscm	**0.44 mg/dscm**	Stack test
Mercury	0.028 mg/dscm or 85% control efficiency	0.028 mg/dscm or 85% control efficiency	Stack test
Sulfur dioxide (daily limit)	77 ppmdv, or 50% reduction of potential sulfur dioxides emissions	77 ppmdv, or 50% of the potential sulfur dioxide emission concentration	Continuous emissions monitoring system
Sulfur dioxide (**monthly limit**)		**29 ppmdv, or 25% of the potential sulfur dioxide emission concentration**	Continuous emissions monitoring system
Hydrogen chloride	250 ppmvd, or 50% reduction of potential hydrogen chloride emissions	**29 ppmdv, or 5% of the potential hydrogen chloride emission concentration**	Stack test
Dioxins/furans	125 ng/dscm (total mass)	**30 ng/dscm (total mass)**	Stack test
Fugitive ash	Visible emissions for no more than 5% of hourly observation period	Visible emissions for no more than 5% of hourly observation period	Stack test

2. The emergency generator (previously classified as an insignificant activity) is subject to 40 CFR 63, subpart ZZZZ "RICE NESHAP". Applicable requirements of subpart ZZZZ are included in the new permit.

3. Previous also permit included a particulate matter limit of 0.02 gr/dscf @12% CO_2 (~1.86 lb/hr[3]). The new limit of 27 mg/dscm (~ 1.05 lb/hr) is more stringent and therefore 0.02 gr/dscf limit is not included in the new Title V permit.

[1] These emission limits (Env-A 3300 effective June 7, 2002) were included in the New Hampshire's original state plan for Municipal Waste Combustion. The state plan is required under Sections 111(d)/129 of the Clean Air Act. The state plan was approved by EPA on February 10, 2003.

[2] The amended state plan, which has more stringent emission limits, was submitted to EPA on January 29, 2009.

[3] Use Eq. 2.4 from 40 CFR 60, App. A, Method 19

$E = C_d F_c (100\%/CO_{2d})$, where C_d is the pollutant concentration and F_c is the carbon dioxide based F factor (1,820 scf/MMBtu for municipal solid waste)

PM = 0.02 gr/dscf x 1,820 scf/MMBtu x 100/12 x 1 lb/7,000 grains x 43.1 MMBtu/hr = 1.86 lb/hr

FACILITY DESCRIPTION

Wheelabrator Claremont Company (Wheelabrator) operates a resource recovery facility in Claremont, New Hampshire. The resource recovery facility burns municipal solid waste (MSW) in two mass burn units[4] that generate steam. The steam drives a turbine-generator to produce electricity for sale to the local utility. The gross generating capacity of the facility at the maximum capacity rating is nominally 6 megawatts (MW).

The MSW combustors are two identical, mass-fired, water wall boilers. Each unit is equipped with a single, auxiliary propane- fired burner (15 MMBtu/hr). These burners are designed to preheat the furnace prior to the introduction of MSW during startup and to ensure combustion during transient periods, including shutdowns and malfunctions. The flue gases from each MWC unit run through pollution control equipment that includes a Powdered Activated Carbon Injection system, a Spray Dryer Absorber and a Fabric filter. A time-shared continuous emission monitoring system (CEMS)[5] measures the emissions of sulfur dioxide (SO_2) & carbon monoxide (CO). Each boiler stack is equipped with a continuous opacity monitoring system (COMS). The following operating parameters are continuously monitored and recorded:

1. Steam flow rate;
2. Carbon feed rate; and
3. Temperature of the flue gases at the inlet to the fabric filter.

The bottom ash and fly ash are discharged to a common disposal system. The common disposal system consists of the bottom wet residue drag conveyor, dewatering incline and ash bins. Prior to entering ash bins, the combined ash passes through a ferrous metals recovery system, where ferrous metals are separated by a magnet and discharged to a scrap metal bin, which is transported to a recycler for processing. The remaining ash is loaded into ash containers and transported to a landfill for final disposal. The ash is loaded into containers and stored under cover until it is transported to the landfill. The facility exceeds the Title V major source threshold for nitrogen oxides (NOx) & hydrogen chloride (HCl) and is therefore required to obtain a Title V Operating Permit[6].

PERMITTING HISTORY

Title V operating permit (TV-OP-050) was issued on June 25, 2004. This permit expired on June 30, 2009. Administrative amendments were issued on August 28, 2006 & December 14, 2007.

[4] Env-A 3302.02(d) - Each MWC unit is considered an existing small MWC unit. Each unit has a combustion capacity of greater than 35 tons/day but less than 250 tons/day of MSW. Construction of each unit commenced prior to August 30, 1999. Also note that the two MWC units at Wheelabrator-Claremont are considered "Class II units" because the aggregate plant combustion capacity is less than 250 tons/day (40 CFR 60.1940 *Definitions*).

[5] Also measures oxygen content of the flue gases.

[6] A Title V Permit is also required pursuant to Section 129 of 1990 Clean Air Act Amendments.

DEVICE DESCRIPTION

The Title V permit covers the following devices:

Emission Unit ID	Description of Emission Unit	Installation Date	Maximum Design Capacity and Permitted Fuel Types[7]
EU01	Municipal Waste Combustion Unit #1 - Reciprocating grate, stoker, water wall boiler Manufacturer: American Schack/Von Roll Grate Serial No. 12405-BX	1985-1986	43.1 million British Thermal Units per hour (MMBtu/hr) - 9,583 lbs/hr of municipal solid waste (MSW) types 0, 1, 2, 3 & 6 wastes. One propane-fired, auxiliary burner rated at 15 MMBtu/hr - equivalent to 159.6 gal/hr of propane
EU02	Municipal Waste Combustion Unit #2 - Reciprocating grate, stoker, water wall boiler Manufacturer: American Schack/Von Roll Grate Serial No. 12406-BX	1985-1986	43.1 MMBtu/hr - 9,583 lbs/hr of municipal solid waste (MSW) types 0, 1, 2, 3 & 6 wastes. One propane-fired, auxiliary burner rated at 15 MMBtu/hr - equivalent to 159.6 gal/hr of propane
EU03	134 hp Emergency Generator Manufacturer: Cummins Model # 6Bt5.9 Serial No. 44162313	1986	Diesel - equivalent to 5 gal/hr

LIST OF INSIGNIFICANT ACTIVITIES

Emission Unit No	Description of Emission Unit
1.	LPG Vaporizer (0.2 MMBtu/hr)
2.	Waste oil-fired space heater (0.14 MMBtu/hr)
3.	Reagent storage silo with fabric filter vent (for spray dryer absorber)
4.	Facility roadways
5.	4,000 gal Phosphoric acid storage tank
6.	100 gal Phosphoric acid day tank
7.	500 gal off-road diesel storage tank
8.	500 gal on-road diesel storage tank
9.	18,000 gal LPG storage tank
10.	250 gal waste oil storage tank

[7] The hourly fuel rates presented in Table 1 are set assuming heating values of 4,500 Btu/lb for municipal solid waste, 137,000 Btu/gal for diesel and 94,000 Btu/gal of propane.

POLLUTION CONTROL EQUIPMENT

Wheelabrator Claremont operates the following air pollution control equipment:

Pollution Control Equipment Number	Description of Equipment[8]	Pollutant Controlled	Emission Unit Number
PCE1 & PCE4	**Pulse jet fabric filter (FF)** Particulate emissions are controlled by a four-compartment pulse jet fabric filter. Each fabric filter compartment contains 225 filter bags.	Particulate matter (PM) & regulated metals	EU01 & EU02
PCE2 & PCE5	**Spray Dryer Absorber (SDA) - lime injection[9]** Reagent slurry is injected using a single two-fluid nozzle assembly located at the inlet to the SDA. Atomization of the reagent slurry is achieved using compressed air. Finely atomized water droplets evaporate in the high temperature exhaust gases to quickly lower the exhaust gas temperature and raise humidity. By lowering the flue gas temperature, SDA produces optimal condition for the powdered activated carbon (PAC) to react with the mercury present in the flue gases.	Acid gases: HCl & SO_2	
PCE3 & PCE6	**Powdered Activated Carbon Injection System (PACIS)** Powdered activated carbon is injected into the flue gases at the inlet to the SDA. The bag containing PAC is suspended above a hopper. The hopper feeds a precision volumetric screw feeder discharging to a pneumatic conveying system. This system transports the material to the injection point at the inlet to the SDA. The feed rate capacity of each feeder is sized so that, in the event of a malfunction, it can supply both boilers with sufficient carbon to maintain compliance with the carbon feed rate limit.	Mercury (Hg)	

[8] As per the request of Wheelabrator-Claremont, description of air pollution control equipment was modified so that the equipment nomenclature is consistent with industry and regulatory terminology.

[9] Typical reagent material is hydrated lime (i.e., $Ca(OH)_2$). Additional alkali sorbent materials such as sodium bicarbonate may be added to the SDA in batches or semi-continuously.

EMISSION CALCULATIONS

Pollutant	Emission limit[10]	Potential Emissions (for each MWC unit)	
	(at 7% O_2)	lb/hr	tpy
Particulate matter	27 mg/dscm	1.05	4.6
Cadmium (Cd)	0.04 mg/dscm	0.0016	0.007
Lead (Pb)	0.44 mg/dscm	0.017	0.075
Dioxins/Furans	30 ng/dscm	1.16×10^{-06}	5.1×10^{-06}
NOx	0.53 MMBtu/hr (NOx RACT)	22.84	100
SO_2	77 ppmdv	7.9	34.6
CO	100 ppmdv	4.51	19.7
Hg	0.028 mg/dscm	1.08×10^{-03}	4.75×10^{-03}
HCl	29 ppmdv	1.7	7.46

Sample calculations:

Maximum heat input for each unit = 43.1 MMBtu/hr [9,583 lbs/hr MSW x 4,500 Btu/lb (heating value)]

F-factor for MSW = 9,570 dscf/MMBtu @ 0% O_2

- PM

27 mg/dscm x 1 lb/453,592 mg x 1 m^3/35.32 ft^3 x 9,570 dscf/MMBtu x (20.9-0% O_2/20.9-7% O_2) x 43.1 MMBtu/hr = 1.05 lb/hr

- SO_2

$77/10^6$ ppm x 64 lb/lb-mole x 1 lb-mole/385.3 dscf x 9,570 dscf/MMBtu x (20.9-0% O_2/20.9-7% O_2) x 43.1 MMBtu/hr = 7.9 lb/hr

- Hg

0.028 mg/dscm x 1 lb/453,592 mg x 1 m^3/35.32 ft^3 x 9,570 dscf/MMBtu x (20.9-0% O_2/20.9-7% O_2) x 43.1 MMBtu/hr = 1.08×10^{-03} lb/hr

- HCl

$29/10^6$ ppm x 36.5 lb/lb-mole x 1 lb-mole/385.3 dscf x 9,570 dscf/MMBtu x (20.9-0% O_2/20.9-7% O_2) x 43.1 MMBtu/hr = 1.7 lb/hr

[10] Env-A 3300, effective 2-2-2008.

Compliance status

❖ **Emission Testing**

	Particulate matter	Cadmium	Lead	Dioxins/Furans	Mercury	Hydrogen chloride	Fugitive ash[11]	Opacity
Units (at 7% O_2)	**mg/dscm**	**mg/dscm**	**mg/dscm**	**ng/dscm**	**mg/dscm**	**ppm**	**%**	**%**
Emission limit	27	0.040	0.44	30	0.028 or 85% control efficiency	29	5	10
Stack test date	**October 19-21, 2010[12]**							
Unit 1	1.3	0.000135	0.00047	1.1	0.00332 (99% removal)	6.4	0	0
Unit 2	1.2	0.000192	0.00125	0.1	0.00405 (94% removal)	6.9	0	0
Stack test date	**September 5-7, 2007**							
Unit 1	4.77	0.00335	0.0333	4.7	0.0061 (88.7% removal)	9.97	0	0
Unit 2	1.03	0.00073	0.0061	4.2	0.0037 (93.3% removal)	11.57	0	0
Stack test date	**October 24-26, 2006**							
Unit 1	1.6	0.00021	0.00072	2.8	0.005 (96% removal)	5.2	0	0
Unit 2	1.7	0.00047	0.00184	3.5	0.005 (95% removal)	6.5	0	0
Stack test date	**November 15-17 and November 29-30, 2005**							
Unit 1	2.58	0.003	0.097	0.7	0.0123 (79.3% removal)	21.45	0	0
Unit 2	0.6	0.001	0.309	0.73	0.008 (94.3% removal)	17	0	0

[11] Visible emissions for no more than 5% of hourly observation period

[12] Wheelabrator-Claremont failed to conduct required compliance stack testing within 36 months of the most recent stack test. On October 24, 2011, DES issued Administrative Fine by Consent No. AF 11-059 which required Wheelabrator-Claremont to pay an administrative fine in the amount of $1,500. Payment was received on October 31, 2011.

Process Parameters during October 19-21, 2010 Compliance Stack Test	**Unit 1**	**Unit 2**
Maximum demonstrated load of MWC unit	28,900 lbs/hr	29,000 lbs/hr
Maximum demonstrated temperature of the particulate matter control device (i.e., flue gas temperature at the inlet to the fabric filter)	318 ^{o}F	310 ^{o}F
Carbon feed rate	1 lb/hr	1 lb/hr

Notes:

1. Pursuant to Env-A 3306.02(b) (i.e., 40 CFR 1795(a)), the Owner or Operator may test less often if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit. In that case, the Owner or Operator is not required to conduct a stack test for that pollutant for the next 2 years. However, the Owner or Operator must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Owner or Operator must perform stack tests every 3rd year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Owner or Operator must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. The provision applies to all pollutants subject to stack testing requirements: dioxins/furans, cadmium, lead, mercury, particulate matter, opacity, hydrogen chloride, and fugitive ash.

2. Wheelabrator-Claremont also conducted optimization tests to determine the optimized carbon feed for the powdered activated carbon injection system. Wheelabrator-Claremont uses a carbon feet rate of 1 lb/hr per each MWC unit.

3. Results of annual NOx RACT testing are summarized below:

NOx RACT Stack Testing			
Date Conducted	**Unit 1**	**Unit 2**	**NOx RACT Limit**
	lb/MMBtu		
May 15, 2012	0.456	0.476	0.53
June 7, 2011	0.42	0.331	
June 9, 2010	0.43	0.516	
June 1, 2009	0.442	0.468	
June 10, 2008	0.363	0.413	
May 21, 2007	0.425	0.507	
May 11, 2006	0.453	0.44	
May 19, 2005	0.438	0.47	

❖ **Continuous emissions/opacity monitoring systems**

Most recent relative accuracy test audit (RATA) was conducted by Wheelabrator Claremont on June 7, 2011. The time-shared CEM system that monitors the emissions from both the MWC units meets the accuracy criteria for the RATA.

❖ **Inspections**

January 4, 2012 Site visit conducted by Padma Baru and Jim Black.

May 19, 2011 On-site compliance evaluation was conducted by Greg Helve; Reporting deficiencies were noted. On July 15, 2011, Wheelabrator-Claremont re-submitted Annual Emissions and NOx reports to correct the deficiencies noted in the inspection report.

❖ **Reports**

Annual compliance certification (for 2011) was received on April 13, 2012;

Semi-annual PD/M report (covering January 1 - June 30, 2012) was received on July 30, 2012;

Semi-annual NSPS subpart BBBB report was received on July 30, 2012.

❖ **Fees**

Annual emission reports and fees for the facility are current through 2011.

REVIEW OF REGULATIONS

State Regulations

Env-A 300, *Ambient Air Quality Standards* - Applicable; Facility is in compliance with NAAQS.

Env-A 600, *Permitting*

- 607.01(e) & (f)- Applicable to 2 MWC units
- 607.01(x) - Applicable; The 2 MWC units are subject to NOx RACT (Env-A 1309)

Env-A 609, *Title V Operating Permits* - Applicable; Wheelabrator is a major source for NOx (PTE > 100 tpy) and Hydrogen chloride (PTE > 10 tpy).

Env-A 700, *Permit Fee System* - Applicable

Env-A 800, *Testing and Monitoring Procedures* - Applicable

Env-A 900, *Owner/Operator Obligations* - Applicable

Env-A 1300, *NOx RACT* - The two MWC units are subject to Env-A 1309 (*Incinerators*). Also, in accordance with Env-A 1301.02(j)(1) and NH SIP approved rule Env-A 1211.11(b), emergency generator (EU03) is limited to 500 hours of operation during any consecutive 12-month period.

Env-A 1400*, Regulated Toxic Air Pollutants* - Applicable; Facility is in compliance. Air dispersion modeling method was used to demonstrate compliance with Env-A 1400. See modeling memo dated March 28, 2012.

Env-A 1604, *Maximum Sulfur Content Allowable in Liquid Fuels* - Applicable

Env-A 1900, *Incinerators and Wood waste Burners* (formerly Env-A 1201.071) - The two MWC units are required to comply with Env-A 1905.01 (*HCl Emission Standards for Incinerators*) and are exempt from other provisions of this chapter (see Env-A 1902.02(b)(1)). Env-A 3300 emission standard for HCl (29 ppmdv or 5% of potential HCl emission concentration at 7% O_2) is more stringent than Env-A 1905.01(c) [50 ppmdv at 7% O_2 or 90% removal efficiency].

Env-A 3300, *Municipal Waste Combustion* - Applicable

On December 6, 2000, EPA promulgated 40 CFR 60 subpart BBBB *Emission Guidelines and Compliance Times for Small MWC units Constructed on or before August 30, 1999*. On June 7, 2002, DES adopted Env-A 3300 incorporating the requirements of subpart BBBB. EPA approved New Hampshire state plan (required under Sections 111 & 129 of Clean Air Act) on February 10, 2003 with an effective date of April 11, 2003. The two MWC units are considered "existing small municipal waste combustion units" pursuant to Env-A 3302.02(d).

On January 1, 2006, New Hampshire enacted more stringent emission standards for small MWCs (RSA 125-C:10-a). On February 2, 2008, DES readopted Env-A 3300 incorporating these new standards. Emission limits for particulate matter, cadmium, lead, sulfur dioxide (monthly limit), hydrogen chloride and dioxins/furans under the "new" Env-A 3300 rule are more stringent than subpart BBBB. On January 29, 2009, DES submitted an amended state plan for EPA's approval.

Federal Regulations

40 CFR 60 New Source Performance Standards

- Subpart E, *Standards of Performance for Incinerators* - Not applicable; Pursuant to 40 CFR 60.50(c), any facility covered by subpart BBBB is not covered under this subpart.
- Subpart Ea - *Standards of Performance for Municipal Waste Combustors for Which Construction is Commenced After December 20, 1989 and on or Before September 20, 1994* - Not applicable
- Subpart Eb - *Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 or for Which Modification or Reconstruction is Commenced After June 19, 1996* - Not applicable
- Subpart AAAA, *Standards of Performance for Small Municipal Waste Combustion Units for Which Construction Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001* - Not applicable.
- Subpart Cb of 40 CFR 60 - *Emission Guidelines and Compliance Times for Large Municipal Waste Combustors constructed on or before September 20, 1994* - not applicable
- Subpart FFF of 40 CFR 62 - *Federal Plan Requirements for Large Municipal Waste Combustors constructed on or before September 20, 1994* - Not applicable
- **Subpart BBBB** - *Emission Guidelines for Small Municipal Waste Combustion Units* - These emission guidelines are incorporated into Env-A 3300.
- Subpart Ec - *New Source Performance Standards for Hospital/Medical/Infectious Waste Incinerators constructed after June 20, 1996* - Not applicable
- Subpart Ce - *Emission Guidelines for Hospital/Medical/Infectious Waste Incinerators constructed on or before June 20, 1996* - Not applicable
- Subpart HHH of 40 CFR 62 - *Federal Plan Requirements for Hospital/Medical/Infectious Waste Incinerators constructed on or before June 20, 1996* - Not applicable

40 CFR 63 NESHAP

- 40 CFR 63 subpart ZZZZ *NESHAP for Stationary Reciprocating Internal Combustion Engines* - Applicable to the emergency generator (EU03). The emergency generator is considered as an existing source because it was installed prior to June 12, 2006. Wheelabrator-Claremont must comply with the applicable requirements no later than May 3, 2013.

40 CFR 64, *Compliance Assurance Monitoring* (CAM) - Not applicable

A pollutant-specific CAM plan is required for any emissions unit that:

1. Is subject to an emission limit or standard for the applicable regulated pollutant;
2. Uses a control device to achieve compliance with any such limitation; and
3. The emissions unit has potential pre-control emissions equal to or greater than the Title V major source threshold for that pollutant.

An emission unit must meet all three of the above criteria to be subject to the requirement to prepare a CAM plan.

- Potential NOx emissions from each MWC unit are greater than 100 tpy. NOx emissions are uncontrolled and are therefore not subject to CAM.
- Since the MWC units are subject to post 1990 Env-A 3300/NSPS subpart BBBB limits, pursuant to 40 CFR 64.2(b)(1)(i) CAM rule is not applicable.

Section 112(r), *Accidental Release Program* - the facility is subject to the Purpose and General Duty clause of the 1990 Clean Air Act, Section 112(r)(1).